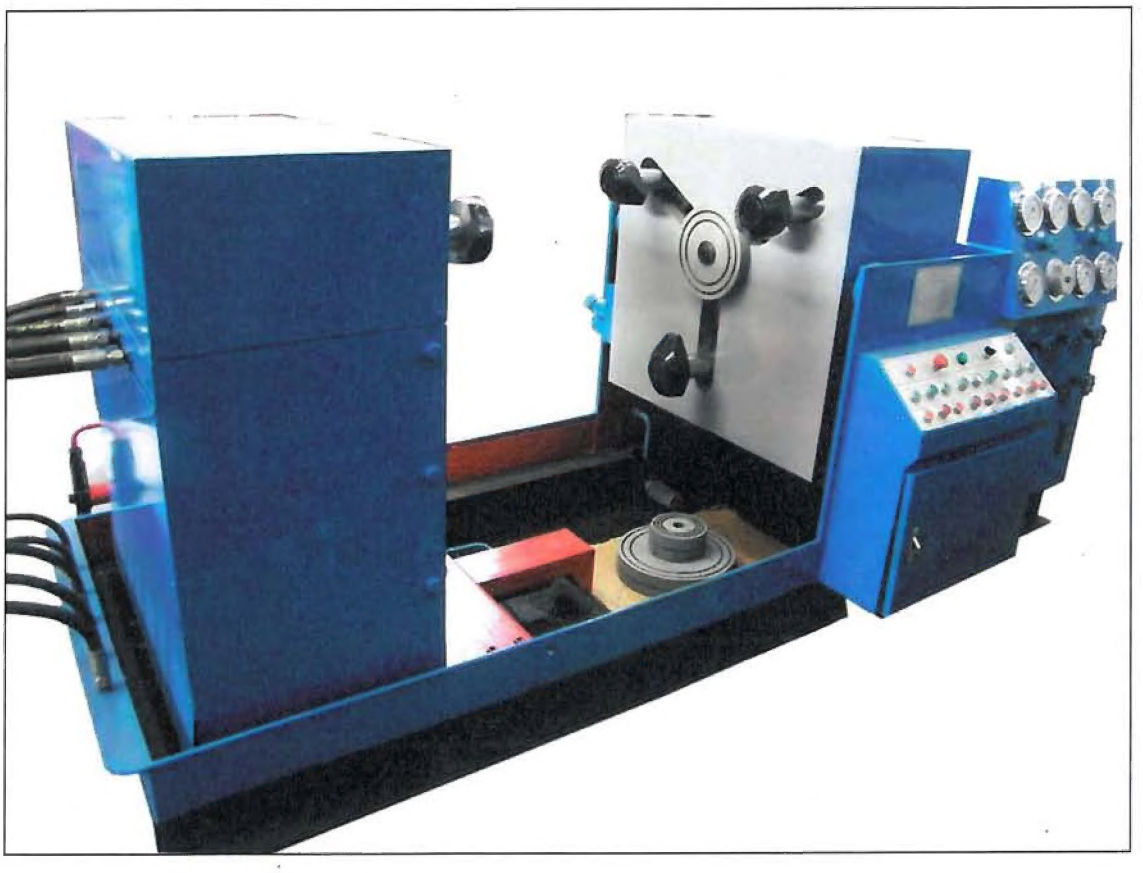
DORY

User Manual

Model YFJ-B300(JWZ-300)

Valve pressure test machine special for flanged valves



1. Summary

The YFJ-B series 'Flanged Valve Test Bench' with hydraulic clamping system and control panel mounted test gauges is capable of perform shell test and seat test of DN15-1000mm flanged end valves according to all international test standards. The machine is manufactured under the ISO9001 quality management system, and it holds the following features:

- Specially applied to perform shell test and seat test of all kinds of DN15-DN1000mm flanged end industrial valves, such as gate valves, ball valves, globe valves, check valves etc;
- automatic hydraulic 3-claw clamping system realizes stable and quick clamping; clamping directly on the both flanges of the tested valves prevent the tested valve body from the effect of external force;
- one side of the bench can be moved, so the test won't be restricted by the structural length of the valve;
- one side of the machine can be reversed by 90 degrees to facilitate the seat and air tightness test;
- configured the high and low pressure water pump;
- Low pressure air test system 7 bar / 100 PSI;
- Test medium can be water, gas or oil, optioned by user; and recycled use and storage;

Owing to the characteristics of reasonable structure, completed function and easy operation, the machine has been widely used in various valves testing for valves manufacture factories, petrochemical and petroleum industry, natural gas projects, water supply and drainage engineering, power plans etc.

2. Structure and working principle

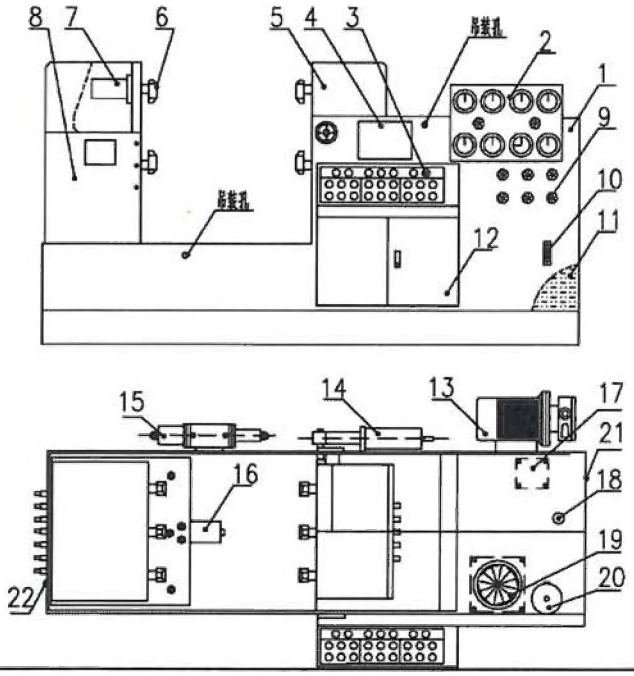
The test bench integrates hydraulic system, electro-mechanical system, high and low pressure supply water pump system, oil-water-gas pressure instruments system, control valves system and hydraulic medium storage and recycle water tank into a whole.

The machine adopts the way of clamping the flanges of the tested valves to perform test, no effect of external force upon the tested valve body. The clamping device is directly driven by the clamping oil cylinder of claws, and the movement is composed of oil cylinder and level, which realizes the claws synchronously radial movement. One side of the bench can be moved, thus the testing performance won't be restricted by the structural length of the tested valves. The other side of the benches can be reversed by 90 degrees, which is convenient for performing leakage test and air tightness test.

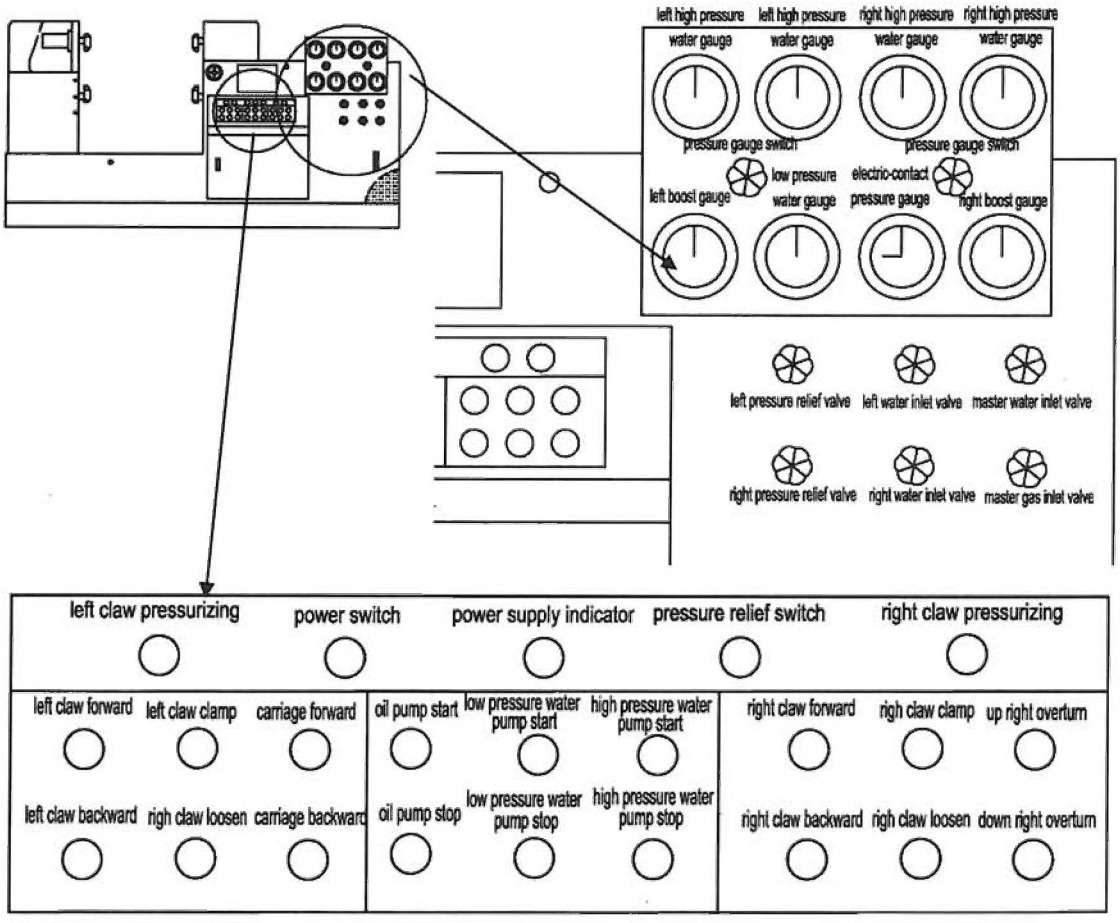
The hydraulic pressure-supply water pump is driven by the hydraulic system, after automatically reversing by the electric control reversing valve, the high pressure water cylinder(pump) will automatic reciprocating movement, then supply the needed test pressure through the water inlet one-way valve and water outlet one-way valve interconvert working.

Storage water tank set at the bottom of the test bench make sure the liquid medium recycle.

3. Structure schematic diagram



1.hydraulic control station
2.panel of pressure gauge
3.panel of control button
4.pressure check list
5.turning bench
6.clamping claws
7.clamping oil cylinder
8.moving bench
9.control valves of gas-water pipelines
10.oil volume gauge
11.oil tank
12.electrics box
13.low pressure water supplying pump
14.turning oil cylinder
15.high pressure water supplying pump
16.moving oil cylinder
17.hydraulic components&integrated
18.oiling port
19.hydraulic motor & oil pump
20.pressurizing oil cylinder
21.oil draining
22.water draining



4. Main technical parameter & specification

Specification		YFJ-B300 (JWZ-300)	Power supply	Voltage (V)	415V
Allowed tested valve	Nominal diameter (inch/mm)	1/2"- 12" / 15-300mm		Frequency (Hz)	50Hz
	Nominal pressure(bar)	150-2500	Motor	Power (kw)	3.0KW
Clamping span	Biggest spacing(mm)	1100		Progression	6
	Smallest spacing(mm)	170	Dimension	Length(mm)	3000
Hydraulic system	Diameter of the oil cylinder(mm)	Ø140X3X2		Width(mm)	1750
	Max. clamping force	100Ton		Height(mm)	1400

5. Pressure check list

YFJ—B300 Clamping Cylinder Pressure Contrast Table

Nominal Diameter		Nominal Pressure bar/class															
		16		25		40		64		100		160		250		420	
				150		300		400		600		900		1500		2500	
		Pressure of Hydraulic Station (bar)															
in	mm	PN	PS	PN	PS	PN	PS	PN	PS	PN	PS	PN	PS	PN	PS	PN	PS
1/2"	DN15											30	30	30	35	40	50
3/4"	DN20											30	30	30	35	40	50
1"	DN25									30	30	30	30	35	40	45	65
11/4"	DN32									30	30	30	30	35	40	45	65
11/2"	DN40							30	30	30	30	30	35	40	50	65	85
2"	DN50							30	30	30	30	30	35	40	50	65	85
21/2"	DN65					30	30	30	30	30	35	40	45	50	65	80	110
3"	DN80	20	30	25	35	30	35	30	40	40	50	60	75	70	90	130	170
4"	DN100	25	35	25	35	30	35	35	45	55	70	80	100	100	130	185	245
5"	DN125	30	35	30	35	35	45	45	60	70	90	100	130	130	165		
6"	DN150	30	35	35	40	45	55	60	80	90	120	140	190	180	255		
8"	DN200	30	40	45	60	70	90	100	130	150	200	230					
10"	DN250	40	50	60	80	90	120	140	185	205	280						
12"	DN300	55	70	85	110	130	170	190	260								

Note:PN–denotes the clamp force of oil cylinder when performing the leakage test
PS–denotes the clamp force of oil cylinder when performing the intensity test
Prohibit the unprofessional person's operation the machine,and any manipulation beyond the norm orover pressure is forbidden strictly

7. Operation method:

[Before the operation, please confirm the oil pump to be at the work condition. When the machine is running continuously longer than one hour, the OIL PUMP PRESSURE RELIEF should be opened to relief the pressure in the oil system of the machine.]

1) Loading the tested valve:

A. Choose the suitable sealing plate and install it on the workbench;
B. Push the button CARRIAGE BACKWARD to make the carriage to required position;
C. Push the button RIGHT CLAW BACKWARD and RIGHT CLAW LOOSEN to make the right claw to required position;
D. Put the right flange of the tested valve close to the right workbench and aim at the sealing plate center;

E. Orderly push the button RIGHT CLAW FORWARD and RIGHT CLAW CLAMP to make the right claw clamps completely the right flange of the tested valve;
F. Push the button CARRIAGE FORWARE to make the left workbench close to the other side flange of the tested valve;
G. Push the button LEFT CLAW FORWARD and LEFT CLAW CLAMP to make the left claw clamps completely the left flange of the tested valve;
H. Check the nominal size and pressure of the tested valve; find out the pressure of the oil cylinder from the Pressure Contrast Table; press button RIGHT and LFET CLAW PRESSURIZING to pressurize the claw clamping up to the required value. (Note: please push the button RIGHT and LEFT CLAW PRESSURIZING for times, the time alternation should be about 5-10 seconds)
I. Then the loading is finished and start to perform the following test.

P.S.: The pressure value of the oil cylinder is showed by the RIGHT and LEFT BOOST GAUGE. It is prohibited that the flanges of the tested valves touches the piston pod of clamping oil cylinder

2) Back seat and shell testing

A. Referring to the working pressure of the tested valve, make sure the tested pressure value, adjust the red needle of the ELECTRIC-CONTACT PRESSURE GAUGE indicates the needed test pressure value.

B. Choose the suitable HIGH PRESSURE WATER GAUGE used in the test, open the tested valve(the back seat of the tested valve can not be closed immediately), and turn on the MASTER WATER INLET VALVE and RIGHT & LEFT WATER

INLET VALVES, close the MASTER GAS INLET VALVE and RIGHT&LEFT PRESSURE RELIEF VALVES.

C. Start the low pressure water pump to pour the water into the body of tested valves until the water come out from the back seat, and then close the back seat of the tested valves. When the low pressure water gauge is up to 15-16bar, stop the low pressure water pump.

D. Start the high pressure water pump to pressurize the water pressure in the tested valve body. The high pressure water pump will stop automatically when the water pressure is up to the set pressure of ELECTRIC-CONTACT PRESSURE GAUGE. At that time, the black needle and red needle of ELECTRIC-CONTACT PRESSURE GAUGE are coincidence.

(Note: when pressurizing, the operator should not leave the machine for avoiding the electric-contact pressure gauge malfunction. If the electric-contact pressure gauge is found malfunction, please push the HIGH PRESSURE WATER PUMP STOP button to stop the testing immediately).

E. Close the MASTER WATER INLET VALVE to save water pressure in seconds, and observe whether the seal face and body of tested valve non-leakage, whether the pressure of HIGH PRESSURE WATER GAUGE drops to check the tested valves pressure performance. Then the back seat and shell test is finished and continues to perform the leakage test.

P.S.:

→When the test pressure is exceed the pressure gauge test range, please shut off the pressure gauge by turn the pressure gauge switch;

→The high water pressure value is showed by the HIGH PRESSURE WATER GAUGE.

3) **Leakage testing (example of the right side seal):**

Because the leakage test is different along with the different type valves, the specific test way is flexible by the users. The following test is example of the right side seal testing for the globe valves:

A. Open the PRESSURE RELIEF VALVE slowly until the pressure descends to the required value of leakage testing. Then close the PRESSURE RELIEF VALVE, RIGHT WATER INLET VALVE.

B. Close the tested valve.

C. Open the LEFT WATER RELIEF VALVE until the LEFT HIGH PRESSURE WATER GAUGE to 0; push LEFT CLAW RELEASE, LEFT CLAW BACKWARD and CARRIAGE BACKWARD buttons to check the RIGHT HIGH PRESSURE WATER GAUGE whether drops and the left body of the tested valves whether leaks.

D. After the testing, open the RIGHT PRESSURE RELIEF VALVE until the RIGHT HIGH WATER PRESSURE GAUGE drops to 0, then follow to perform the air tightness testing.

P.S.: Open the PRESSURE RELIEF VALVE to relief the water and air, and then start the next step. If not, the operator would be injured badly.

4) **Air tightness test (the gas source is provided by user)**

A. Connecting to the air source.
B. Push UPRIGHT OVERTURN button to turn the right workbench up right 90° .
C. Then pour the water into the upper chamber of the tested valve.
D. Shut off the RIGHT and LEFT PRESSURE RELIEF, LEFT WATER INLET VALVE and MASTER WATER INLET VALVE, open the RIGHT WATER INLET VALVE, MASTER GAS INLET VALVE.
E. Supply the gas into the body of tested valve, observe whether the bubble appear in the upper chamber of the tested valves and the HIGH PRESSURE WATER GAUGE is drop.
F. After the testing, shut off the MASTER GAS INLET VALVE, turn on the RIGHT PRESSURE RELIEF VALVE slowly until the HIGH PRESSURE WATER GAUGE return to 0, make sure no pressure existed in the body of tested valves, then push DOWNRIGHT TURNOVER button, after the valve being hoisted, push RIGHT CLAW LOOSEN and RIGHT CLAW BACKWARD button to relax the tested valves, then the testing finished.

8. Water-air pipe principle figure